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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/530,122	04/20/2000	HIROKI NAKAHARA	9319S-000126	2816

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EXAMINER
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QI, ZHI QIANG

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 03/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/530,122

Applicant(s)

NAKAHARA ET AL.

Examiner

Mike Qi

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AW

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21, 23 and 24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21, 23 and 24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on Jan.2, 2004 has been entered.

### ***Drawings***

1. Figures 11 and 12 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitations in the claims 1, 6, 10, 17, 23 and 24 such as "... an alignment layer is formed inside a region of the substrate delimited by the sealant ..." must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-21 and 23-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 6, 10, 17, 23 and 24, recitation “. . .an alignment layer formed on the electrodes and inside the region delimited by the sealant; wherein the alignment layer is formed so as to partially overlap the sealant in a region for conducting between the substrates and cross a region for forming the sealant in a region other than the region for conducting between the substrates” (**claim 1**); “. . . thin film for forming the alignment layer are formed inside the region delimited by the sealant, and the alignment film also formed to partially overlap the sealant in a region for conducting between the substrates and to cross the regions for forming the sealant in a region other than the region for conducting between the substrates” (**claim 6**); “. . . each of said first and second alignment layer is formed inside the region delimited by the sealant so as to partially overlap the sealant in a region for conducting between the substrates and cross said sealant on a side of said first and second substrate other than a side provided with said terminals” (**claim 10**); “. . .depositing a thin film for forming the alignment layer on said first substrate inside a region of the substrate delimited by the sealant, said thin film formed to partially overlap the sealant in a region for

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conducting between the substrates and crossing said sealant deposit region on a side of each of said smaller substrate forming regions other than a side provided with said terminals” (**claim 17**); “. . . an alignment layer formed on the electrodes and inside the region delimited by the sealant; wherein the alignment layer is formed so as to partially overlap the sealant in a region for conducting between the substrates and cover a region for forming the sealant in a region other than the region for conducting between the substrates” (**claim 23**); and “. . . each of said first and second alignment layer is formed inside the region delimited by the sealant so as to partially overlap the sealant in a region for conducting between the substrates and cover said sealant on a side of said first and second substrate other than a side provided with said terminals” (**claim 24**) are not definite.

Because the alignment film is formed inside the region delimited by the sealant. Therefore, the alignment film cannot overlaps the sealant region and cannot cross or cover the sealant region. How the alignment film can be formed inside the sealant region and also be formed to overlap the sealant region and to cross or cover the sealant region. According to the Figs. 5-10, the alignment film is not formed inside the region delimited by the sealant so as to overlap the sealant region and cross or cover the sealant region.

Therefore, for examination purpose, it is interpreted as the alignment film is formed to overlap the sealant region and to cross or cover the sealant region.

Claims 2-9, 11-16 and 18-21 are dependent to the claims 1, 10 and 17 respectively, so that all the dependent claims have the deficiency set forth above.

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***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 10, 17, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant admitted prior art (AAPA) in view of US 6,507,381 (Katsuya et al).

Claims 1, 10, 17, 23 and 24, AAPA discloses (page 1, line 10 – page 4, line 21; Figs.11-12) that a liquid crystal panel comprising:

(concerning claims 1 and 23)

- a pair of substrates (1, 2) bonded to each other by a sealant (3) with a predetermined gap therebetween;
- a liquid crystal (40) enclosed in the region delimited by the sealant (3) between the pair of substrates (1,2);
- electrodes (6A,7A) formed on each of the pair of substrates (1,2) for controlling the alignment state of the liquid crystal;
- an alignment layer (13, 23) formed on the electrodes.

(concerning claims 10 and 24)

- a first substrate (1);
- first electrodes (6A) formed on the first substrate (1);
- a first alignment layer(13) formed over the first electrodes (6A);

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- a second substrate (2);
- a second electrodes (7A) formed on the second substrate (2);
- a second alignment layer (23) formed over the second electrodes (7A);
- a sealant (3) coupled between the first and the second substrates so as to form a gap therebetween.

(concerning claim 17)

- providing a first substrate (1);
- defining a plurality of smaller substrate forming region (1A) on the first substrate (1), and the plurality of smaller substrate forming region (1A) being divided by a plurality of projected cutting lines (L1,L2);
- depositing electrodes (6A) on the first substrate (1) within each of the smaller substrate forming regions (1A);
- defining a sealant deposit region (3) along each of the smaller substrate forming regions (1A);
- depositing a thin film for forming an alignment layer (13) on the first substrate (1).

AAPA also indicates (page 3, line 17 – page 4, line 4; Fig.11) that in the conventional liquid crystal panel, since there is a space (S) between the sealant (3) and the alignment layer (13 or 23), so that a low twist domain occurs in the liquid crystal layer (40) corresponding to the space (S), and that would degrades the display quality, such that the region corresponding to the space (S) cannot be used as the image display region, thus the effective image display region is reduced.

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AAPA does not expressly disclose that terminals formed on each of the pair of substrates for conducting between the substrates (or between first and second electrodes), and each of the alignment layers is formed to partially overlap the sealant region and to cross (or to cover) the sealant forming region that is other than the region for conducting between the substrate (or the region having terminals).

However, Katsuya discloses (col.4, line 59 – col.8, line 3; Fig.2) that a structure of a liquid crystal panel (10) in which the alignment films (12a,12b) are formed to partially overlap the sealer forming region (15) for conducting between the substrates (11a, 11b) (display region) and to cross (or to cover) the sealer forming region (15) in a region other than the region for conducting between the substrates (11a,11b) (non-display region), or in other words, the alignment layer (12a, 12b) is formed to cover or to cross the sealant forming region (15) that is other than the region for conducting between the substrates or the region having electrode terminals. Therefore, the image display region (having electrode terminals) would be enlarged.

Katsuya indicates (col.7, lines 59 – 63) that such construction of the liquid crystal panel would make it possible to miniaturize the liquid crystal panel itself, such that the image display region would be utilized more efficiently, and that would comparatively enlarge the image display region.

The combination of AAPA and Katsuya, those skilled in the art would consequently develop the modification to reduce the space between the sealant forming region and the alignment film as close as possible in order to reduce the



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low twist domain occurrence, such as to make the alignment layer to cover or to cross the sealant forming region for enlarging the image display region.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to arrange the alignment layers to partially overlap and to cover or to cross the sealant forming region as claimed in claims 1, 10, 17, 23 and 24 for miniaturizing the liquid crystal panel and enlarging the image display region.

7. Claims 2-9, 11-16, 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA and Katsuya as applied to claims 1, 10, 17, 23 and 24 above, and further in view of US 5,150,239 (Watanabe et al).

Claim 2, although AAPA and Katsuya do not expressly disclose the sealant is a one-part thermosetting epoxy sealant, but Watanabe discloses (col.1, lines 14-35) that a one-pack type or single-liquid type epoxy resin adhesive (such as one-pack type thermosetting epoxy adhesive) has been conventionally used as an adhesive for constituting a sealant for liquid crystal cells, because of its high strength and excellent heat resistance, chemical resistance and moisture resistance, etc.

Therefore, it would have been obvious to those skilled in the art to use one-part thermosetting epoxy as a sealant as claimed in claim 2 for achieving high strength and excellent heat resistance, chemical resistance and moisture resistance, etc.

Claims 3-4, the alignment layers is formed up to the region overlapping the sealant forming regions as the explanation of Katsuya above, that would

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have been at least obvious. The rectangular substrates have four sides, so that the sealant must be deposited corresponding to at least three sides of the substrates (one side would be used for the input-output terminals and terminals for conducting between substrates, i.e., the electrical wirings) and the alignment layer formed up to the edges of the substrate so as to conducting the liquid crystal to display image efficiently. Therefore, it would have been obvious to those skilled in the art at the time the invention was made to arrange the sealant corresponding to four sides of the substrates or at least three sides excluding one side for the electrical wirings as claimed in claims 3-4 for achieving good sealing between the substrates and display image efficiently.

Claim 5, the limitations are the same as the claim 4. Therefore, claim 5 is redundant.

Claims 6-9, using product-by-process limitations, but the patentability is based on the product itself (see MPEP 2113), and AAPA discloses (Figs.11-12) that the electrodes (7A) are formed on the surface of a large substrate (2) for forming a plurality of pair of substrates (1A,2A) along cutting projection lines (L1,L2). Although AAPA does not expressly disclose the alignment layers are formed overlapping the sealant including the cutting projection lines, but Katsuya discloses (Fig.2) that the alignment layers are formed to cross the sealant forming region other than the region for conducting between the substrate, and overlapping the edge portion of the sealant (the cutting projection lines), and alignment films would be formed in strips along the cutting projection line, as the

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explanation of Katsuya above, and that would have been at least obvious as to enlarge the image display region .

Claims 11-14, Katsuya discloses (Fig.2) that the first alignment layer (12a) is interposed between the sealant (15) and the first substrate (11a); the second alignment layer (12b) is interposed between the sealant (15) and the second substrate (11b); the first alignment layer (12a) extends to a perimeter of the first substrate (11a); and the second alignment layer (12b) extends to a perimeter of the second substrate (11b). As the explanation of the Katsuya above, such structure of liquid crystal panel would miniaturize the liquid crystal panel, and the display area would be utilized efficiently, and it would enlarge the image display region.

Therefore, it would have been obvious to those skilled at the time the invention was made to arrange the alignment layers to cross or to cover the sealant forming region as claimed in claims 11-14 for miniaturizing the liquid crystal panel and efficiently utilizing the display area.

Claim 15, AAPA discloses (Fig.12) that the rectangular substrates have four sides, and one side would be used for the input-output terminals, i.e., the electrical wirings.

Claim 16, AAPA discloses (Fig.11) that a first transparent insulating film (12) interposed between the first alignment layer (13) and the first substrate (1) over the first electrodes (6A); a second transparent insulating film (22) interposed between the second alignment layer (23) and the second substrate (2) over the second electrode (7A); and the Fig.11B shows the first and second transparent

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insulation films (12,22) are complementing a configuration of the first and second alignment layers (13,23).

Claims 18-19, Katsuya discloses (Fig.2) that a structure of a liquid crystal panel in which the alignment film (12b) is deposited to overlap the sealing deposit region (15) and extends to the edge portion of the panel, so that the alignment film (12b) is also overlap the plurality of projected cutting lines. As the explanation of the Katsuya above, such structure of liquid crystal panel would miniaturize the liquid crystal panel, and the display area would be utilized efficiently, and it would enlarge the display area.

Therefore, it would have been obvious to those skilled at the time the invention was made to arrange the alignment layers overlapping the sealing deposit region as claimed in claims 18-19 for miniaturizing the liquid crystal panel and efficiently utilizing the display area.

Claim 20, AAPA discloses (Fig.11-12) that to bond the substrates must deposit the sealant on the sealant deposit region, and it is a conventional in the art to deposit the sealant on each smaller substrate, since that would achieve a stronger bonding.

Claim 21, AAPA discloses (Figs.11-12) that providing a second substrate (2); defining a plurality of second smaller substrate (2A) being divided by a plurality of second projected cutting lines (L1,L2); depositing second electrode (7A), and the electrodes must have terminals for supplying electrical signals; defining a second sealant deposit region along each second smaller substrate (2A); depositing a second alignment layer (23) on the second substrate (2);

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bonding the substrates; cutting the first and second substrate along the projecting cutting lines (L1, L2). Although AAPA does not expressly disclose the alignment layer crossing the sealant deposit region on a side of each of the second smaller substrate forming region other than the side having terminals, but Katsuya discloses (col.4, line 59 – col.8, line 3; Fig.2) that a structure of a liquid crystal panel (10) in which the alignment films (12a,12b) crossing or covering the sealant deposit region. The rectangular substrates have four sides, so that the sealant must be formed around at least three sides. Such structure would miniaturize the liquid crystal panel, and the display area would be utilized efficiently, and it would enlarge the display area.

Therefore, it would have been obvious to those skilled at the time the invention was made to arrange the alignment layers engaging the sealant forming region as claimed in claim 21 for miniaturizing the liquid crystal panel and efficiently utilizing the display area.

### ***Response to Arguments***

8. Applicant's arguments filed on Oct. 10, 2003 have been fully considered but they are not persuasive.

Applicant's arguments are as follows:

1) The subject matter of the amended claims 1, 10, 17, 23 and 24 was previously found in claim 22.

2) The claimed configuration enables the use of a flexographic printer and such configuration make it easier to control the flexographic printer.

Examiner's responses to applicant's arguments are as follows:

1) The previous claim 22 recites ". . . wherein the alignment layer is formed so as to partially overlap the sealant in the region for conducting between the substrates", and that does not claim an alignment layer formed inside the region delimited by the sealant.

2) In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the claimed configuration enables the use of a flexographic printer and such configuration make it easier to control the flexographic printer, and the claims cannot be found how to make it easier to control the flexographic printer.) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

**Conclusion**

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Such as the references US 4,391,491, US 5,396,355, etc.

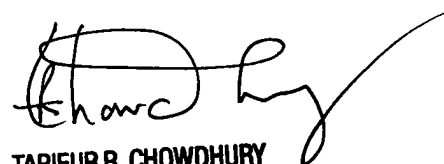
10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299. The examiner can normally be reached on M-T 8:00 am-5:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mike Qi  
March 1, 2004



TARIFUR R. CHOWDHURY  
PRIMARY EXAMINER